

Related Fact Fun

Reporting Category Computation and Estimation

Topic Recalling basic addition facts and corresponding subtraction facts

Materials

- Clear plastic bag
- Colored plastic linking cubes
- Cube-Counting Template (attached)
- Triangular Related Fact Template (attached)
- Crayons or markers

Vocabulary

add, addition, subtract, subtraction, number sentence, related fact, sum, difference, + sign, – sign, = sign, fact family, combine or joined, minus, put together, take apart

Student/Teacher Actions (what students and teachers should be doing to facilitate learning)

Note: Students should begin with related facts to 10 and gradually work their way up to 18.

1. Place a target number of linking cubes of two different colors in a clear plastic bag. For example, when working with sums to 9, place 4 green cubes and 5 yellow cubes in the bag. Display a large cube-counting template, and model how to create a two-number combination with a sum of 9 by linking 4 green cubes and then 5 yellow cubes on the template.
2. Display a large triangular related fact template. Model counting and writing the number of green cubes (4) at the bottom left of the triangle and counting and writing the number of yellow cubes (5) at the bottom right of the triangle. Then, show how to link the 4 green cubes with the 5 yellow cubes and count to get a sum of 9 cubes. Write the numeral 9 at the top of the triangle. Write the number sentence $4 + 5 = 9$ on the board. Next, show how to reverse the plastic cubes so the 5 yellow cubes are to the left of the 4 green cubes, and write the new corresponding number sentence $5 + 4 = 9$. Use counting to confirm that there are still 9 cubes even though the order of the colors has been reversed.
3. Ask students once again how many cubes are joined together (9). Ask how many green cubes would be left if you broke off all five of the yellow cubes. After students have answered, break off the yellow cubes, and count the remaining cubes. Explain as you write the number sentence $9 - 5 = 4$ that you had 9 cubes and took away 5 and that left 4.
4. Put the yellow cubes back together with the green cubes, and ask how many cubes you have now. Count to confirm there are 9. Ask what would happen if this time, you broke off the 4 green cubes. Ask how many would be left. Again, write the number sentence $9 - 4 = 5$ as you talk about what you did.

5. Have students look at the four number sentences you wrote and tell you what they notice. Explain that this is a “related fact” because all the numbers are related to each other in a special way. Discuss the relationship, using the cubes.
6. Ask students to create, individually or with a partner, a different two-number combination for the sum of 9, using the number template and cubes.
7. When students have completed this task, ask a student to show his/her cube combination to the class. Again, model how to record this combination, using a new triangular related fact card. Have students assist you as you write the four number sentences (related fact) represented by the cubes.
8. Repeat several times using different combinations for the sum of 9, and record these combinations on new triangular related fact cards.
9. After repeated experience with making fact families with cubes and recording them on triangular cards, have students use the cards to help them recall the basic addition and subtraction facts. Working with a partner, one student covers one of the three numbers on the card, and his/her partner must complete the related fact by stating the missing addend or sum. For example, using the numerals 4, 5, and 9, one student covers the 5 with his/her thumb, and the partner must state: “ $4 + 5 = 9$, $5 + 4 = 9$, $9 - 5 = 4$, and $9 - 4 = 5$.”
10. Repeat these procedures for other sums to 18.

Assessment

- **Questions**
 - “How many different two-number combinations with a sum of (a given number) can you find? What strategy will you use to help you keep track of your combinations?”
- **Journal/Writing Prompts**
 - “Draw/write about two fact families you made.”
 - “Make as many different triangular related fact cards as you can for a sum of 12. Tell how many you could make. Draw and write about them in your journal.”
- **Other**
 - As you circulate among the students, clarifying, assisting, and conversing, make notes about how well students follow directions, problem solve, and count, as well as about the accuracy of their cards. Check math journals for evidence of understanding or need for re-teaching and reinforcement.

Extensions and Connections (for all students)

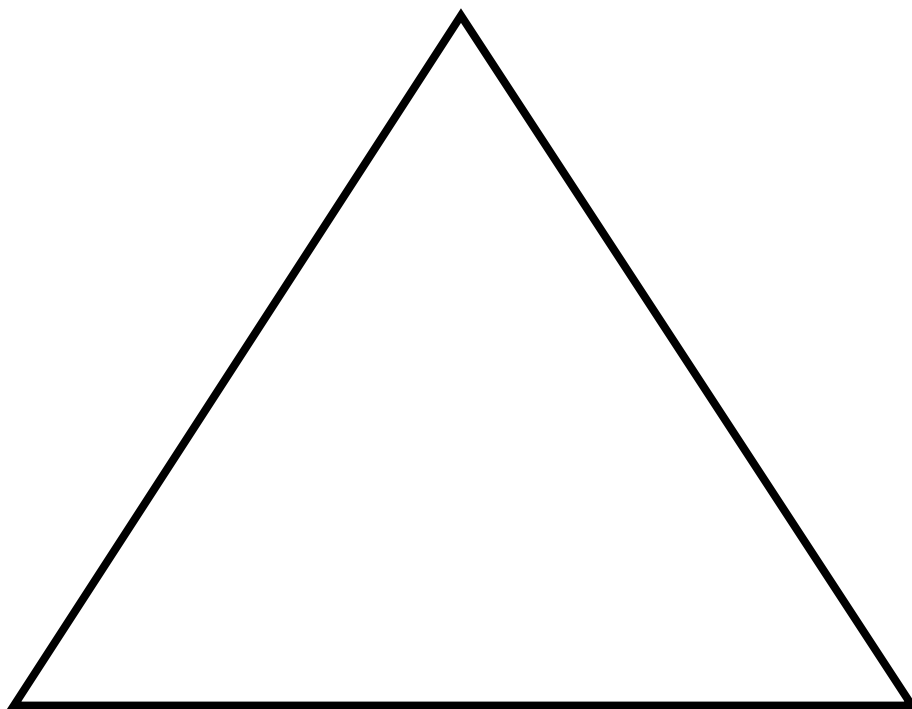
- Challenge students to make charts showing all the fact families for sums to 18 or less.
- Have students design their own cards to illustrate various fact families.

Strategies for Differentiation

- Make different cube-counting templates as needed to help students keep track of the sum and allow them to focus on the combinations that can be made. Cards can be taken away when no longer needed by students.
- Create a chart showing symbol–word correspondence (e.g., $=$ means “equal”).
- Create templates with _____ + _____ = _____ and _____ - _____ = _____.

- Provide students with number cards and symbol cards to wear around their necks, and have them stand side by side in various orders to create related facts.

Triangular Related Fact Template



Cube-Counting Template

--	--	--	--	--	--	--	--	--